Point Mugu Restores Critical Wetlands

Native Saltmarsh Plants & Tidal Channels Enhance Habitat, Support Mission

BASE PERSONNEL FROM the environmental department onboard Naval Base Ventura County (NBVC) Point Mugu, California with some help from the Channel Islands Restoration (CIR) staff and volunteers are enhancing critical wetlands without competing with the base's military mission.

NBVC Point Mugu with restoration site outlined (west of Las Posas between 12th and 13th Streets).
Google Earth

Coastal saltmarsh wetlands are a rare habitat in California and the Mugu Lagoon estuary complex located on NBVC Point Mugu is the largest in Southern California. There are over 2,100 acres of wetlands which supports hundreds of species, including 230 bird and 204 native plant species. Seven of these species are rare, threatened or endangered, and protected by environmental laws. NBVC Point Mugu has a comprehensive wetland restoration program that effectively protects this valuable resource while maintaining efficiency in implementing the base's military mission.

After removing an invasive iceplant and lowering the elevation to increase tidal inundation, native saltmarsh species are planted.
Emily Chase

Some projects or operations on NBVC Point Mugu occasionally require mitigation for impacts to wetlands. These impacts rarely occur even though the wetland complex on base is 48 percent of the total land area for the installation. Wetland restoration projects, implemented on the base since the 1990's, are executed by personnel from the NBVC Point Mugu Environmental Division which oversees the associated construction, restoration, and permitting activities. The proactive wetland restoration projects provide opportunities for instant mitigation acreage if damage to wetlands occurs.

Currently, there is an effort to restore salt marsh in an abandoned land fill. The salt marsh vegetation used in restoration projects at Point Mugu require variable water inputs, particular elevation levels, and have different salt tolerance; these conditions can make it difficult to predict the success of restoration projects. "The features that make natural

CIR staff and volunteers installed 5,000 native plants. Flags mark the area where various species are planted.
Joshua More

The CIR nursery grows plants with seeds collected near restoration site so plants are adapted to the local environment.
Kelle Green

coastal wetlands unique are the same features that create restoration challenges: Their physiochemical environment is complex; they are biologically diverse, and they are vulnerable to changing sea levels. The complex physiography of coastal wetlands is difficult to create or restore, especially where prior landforms have been obliterated through filling." (Source: Handbook for Restoring Tidal Wetlands, Zeller, 2001.) This is the case at the 12th Street restoration site since it was historically used as a land fill disposal site. The contents were removed and clean sediment was added before native plants (Western marsh rosemary) were reestablished.

Five thousand native plants were installed by Channel Islands Restoration (CIR) staff and volunteers. The native plants were started from seeds and cuttings collected at NBVC Point Mugu and grown in CIR's nursery. Biochar was added in some areas of planting as an experiment to see if it increases the growth of the plantings. Biochar is made from organic matter heated until it decomposes; the result is a high carbon product with high surface area good for retaining water and nutrients in soil. It has been used at NBVC Point Mugu before with positive results of native vegetation colonizing the mounds and trenches where it had been placed. This has positive implications especially for newly restored areas that may not have developed the rich, biogenic soils required for salt marsh plant recruitment. (Source: www.biocharsupreme.com/pages/understanding-biochar.)

Some restoration projects, such as the one on 12th Street, may be entered into the NBVC wetland mitigation program—a program that is currently being developed in partnership with the U.S. Army Corps of Engineers. The purpose of the NBVC wetland mitigation program is to create in advance of the need, economically efficient and flexible wetland mitigation opportunities. The principle goal of the program is to sustain no net loss of wetlands and a no net loss of military mission or readiness.

The Basics About CIR Projects

CIR PROJECTS PROTECT rare and endangered plants and animals by restoring habitat in sensitive and unique natural areas on the California Channel Islands and adjacent mainland. The CIR educates a variety of groups about the value of native habitat and how to protect it and recruits volunteers and develops public and private funding sources for habitat restoration programs. For more information about or to volunteer with CIR, visit http://cirweb.org/volunteer2.htm.

TOP LEFT: Western marsh rosemary (*Limonium californicum*).

TOP RIGHT: Woolly seablight (*Suauda taxifolia*).

ABOVE: Fleshy jaumea or marsh jaumea (*Jaumea carnosa*) has a yellow daisy-like flower and blooms from April until December.

Emily Chase

Base operations that may impact wetland habitat are permitted and monitored to minimize changes to hydrology and habitat function because they are protected by federal and state laws. Mitigation for wetlands can be a long process to develop the habitat type that was impacted. The 12th Street restoration site is a prime example of how land can be returned to its natural state before mitigation is required. Key elements and benefits of this program include:

- Restoration sites are pre-approved by installation authorities through a vetting process that selects for appropriate sites (sites that can be connected to the existing hydrology and naturally maintained) and eliminates any site that has a potential for future base facilities.
- A detailed mapping process included in the program depicts all potential sites and projected levels of effort required to restore the site.
- Proactive restoration creates sites well in advance of the need, which not only creates an ecologically high-value site, but also affords a temporal value for wetland function.
- Some sites are selected to allow for storm surge or incremental sea level rise which supports climate change requirements in the base's Integrated Natural Resource Management Plans. These "pre-storation" sites will accommodate salt marsh migration in an area that has limited available area due to topography, highways, and agricultural areas that occur outside of base boundaries.

After successful restoration and monitoring, the 12th Street restoration site can be assessed as a fully functioning wetland. The varying topography and vegetation provide good tidal connection, critical environmental conditions to maintain healthy populations of benthic invertebrates, and ample support to the higher trophic level species that depend or utilize this salt marsh habitat. The proximity of this site to the wetlands north and south increases the overall area that supports wildlife either for resting and/or foraging. These programs that support the complex interactions between water, land, plants, animals and the military mission can be challenging. It takes thoughtful, long-term planning and military support to achieve great rewards. ⚓

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